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ABSTRACT

This bulletin provides general information about the achievement testing program and specific information about the design, the composition, and the scoring of the Grade 6 Science Achievement Test in Alberta. Contents included are: (1) "General Information," describing the purpose, nature, and administration of the program; (2) "Description of the Grade 6 Science Achievement Test," describing the content and emphasis of the test with sample questions; and (3) "Performance Standards" discussing acceptable and excellent levels of achievement. Definitions of cognitive levels and an article answering several questions about the test are appended. (YP)

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Student Achievement Testing Program Bulletin

Grade 6 Science

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This bulletin contains general information about the 1990 Student Achievement Testing Program, and information specific to the Grade 6 Science Achievement Test. Additional copies of this bulletin may be obtained by telephoning Alberta Education at 427-2948.

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September 1989

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PURPOSE OF THE BULLETIN

The Grade 6 Science Achievement Test will be written on June 12, 1990. This bulletin provides general information about the Achievement Testing Program as well as specific information about the design, the composition, and the scoring of the Grade 6 Science Achievement Test.

The *Grade 6 Science Curriculum Specifications (May, 1986)*, presents the specific content and objectives for grades 4, 5, and 6. These specifications are used as a guide for the development of the test questions.

Students should have access to the information in this bulletin, particularly to the sample questions.

Questions or comments regarding this bulletin should be directed to:

Dennis Belyk
Associate Director
Achievement Testing and Diagnostic Evaluation Programs
Student Evaluation and Records Branch
Alberta Education
Devonian Building, West Tower
11160 Jasper Avenue
Edmonton, Alberta T5K 0L2
Phone: 427-2948

or to the nearest Alberta Education Regional Office:

Grande Prairie Regional Office
5th Floor, Nordic Court
10014 - 99 Street
Grande Prairie, Alberta T8V 3N4
Phone: 538-5130

Edmonton Regional Office
8th Floor, Harley Court
10045 - 111 Street
Edmonton, Alberta T5K 1K4
Phone: 427-2952

Calgary Regional Office
12th Floor, Rocky Mountain Plaza
615 Macleod Trail S.E.
Calgary, Alberta T2G 4T8
Phone: 297-6353

Red Deer Regional Office
3rd Floor West, Provincial Building
4920 - 51 Street
Red Deer, Alberta T4N 6K8
Phone: 340-5262

Lethbridge Regional Office
200 - 5th Avenue South
Lethbridge, Alberta T1J 4C7
Phone: 381-5243

GENERAL INFORMATION

Purpose of the Achievement Testing Program

The Achievement Testing Program provides Alberta Education, school jurisdictions, and the public with information significant at the provincial and local levels about student knowledge, understanding, and skills in relation to program objectives. This program is not intended to provide information to be used for student placement or promotion.

The achievement tests are administered on a four-year cycle in four subject areas: language arts, social studies, mathematics, and science; and at three grade levels: 3, 6, and 9.

Nature of the Achievement Testing Program

The achievement tests are specific to the program of studies prescribed by the Minister of Education. Curriculum specifications for each subject area, provided by the Curriculum Branch and the Language Services Branch of Alberta Education, identify the major content areas, the specific learning objectives within each content area, and the emphasis that each objective is to receive. The test questions reflect these curriculum specifications. They also reflect the standards that are implicit in the curriculum. For further information about these standards, please refer to pages 21 to 23.

Classroom teachers from across the province are extensively involved in developing and field testing the questions. The student responses are analysed after field testing to determine each question's suitability for inclusion on an achievement test. Questions may undergo several revisions before they appear on the achievement test.

The final draft of each test is examined by an Achievement Test Review Committee that includes representatives of The Alberta Teachers' Association, the Conference of Alberta School Superintendents, Alberta's post-secondary institutions, and Alberta Education.

Exemptions from the Achievement Testing Program

All students who have been taught the subject being tested are expected to participate in the Achievement Testing Program. Any exceptions should be identified by the principal and approved by the superintendent of schools.

The only students who may be excused from participating are those for whom the test is inappropriate. That is:

1. Students who are enrolled in an approved program that has been designed for special needs students.
2. Students who were taught the subject being tested in another semester or year.
3. Students who would normally write mathematics, science, or social studies but who are enrolled in an English as a Second Language program.
4. Students who are being taught the specific subject being tested (mathematics, science, or social studies) in a language other than English.

Exemptions for reasons other than those outlined must be approved by the Director of the Student Evaluation and Records Branch.

Note: All Grade 9 students are expected to write the Grade 9 English Language Arts Achievement Test in 1990.

Students Receiving Instruction in French

A French language arts achievement test is available and Francophone and French Immersion students are encouraged to write it. A French translation of the Grade 6 Science Achievement Test is also available. School jurisdictions are requested to identify the number of English and French versions of the achievement tests, that they require, on forms that Alberta Education will send to them by February 1, 1990. These forms must be returned through each jurisdiction office by March 9, 1990.

Administration of the Achievement Testing Program

The Achievement Testing Program is administered in accordance with *Examination Regulation 531/82* pursuant to Section 11(1)(g) of the *School Act*. The achievement tests must be administered on the scheduled dates and may not be rescheduled.

The achievement tests must remain unopened until the time of administration. Duplication of any test materials, including the test booklets and answer sheets, is expressly forbidden.

Immediately following the administration of the scheduled achievement tests, the principal must ensure that test booklets and answer sheets are forwarded to school board offices. The school board is responsible for collecting and forwarding to the Student Evaluation and Records Branch all test materials containing students' responses. Further details regarding procedures for returning these materials to the Branch will be issued when the achievement tests are delivered. For private schools, the Regional Offices of Alberta Education assume responsibility for collecting and forwarding test materials to the Student Evaluation and Records Branch. All unused testing material may be retained by the school jurisdiction.

Alberta Education will supervise the scoring of all achievement tests. The scoring of achievement tests by school personnel prior to returning test materials to the Student Evaluation and Records Branch is a violation of the *Examination Regulation* and contrary to the intent of the Achievement Testing Program.

During 1990, the achievement tests will be administered according to the following schedule:

Tuesday, June 12, 1990

Grade 3 Mathematics (a.m.)

Grade 6 Science* (a.m.)

Grade 9 English Language Arts (a.m. and p.m.)

Thursday, June 14, 1990

Grade 9 French Language Arts (a.m. and p.m.)

In 1991, the achievement tests will be administered according to the following schedule:

Tuesday, June 11, 1991

Grade 3 Science (a.m.)

Grade 6 Mathematics* (a.m.)

Grade 9 Social Studies* (a.m.)

* A French translation of this test is available. The French translation must be administered at the same time as the English version.

Reporting the Achievement Test Results

In September, 1990, a provincial report will be issued that will present the overall results for the province on major curriculum dimensions. Each jurisdiction will receive a district profile of student achievement to parallel the provincial report, as well as guidelines for interpreting the jurisdictional results in relation to provincial standards. Alberta Education will not issue individual statements of results to students; individual student profiles will be returned to superintendents.

Any students who write a test, although qualified for exemption, will not have their scores included in the provincial results. Separate jurisdiction and school reports will be prepared for these students.

Jurisdictions and schools who choose to have their Francophone and/or French Immersion program students write the Grade 6 Science Achievement Test either in English or in French translation will receive separate jurisdiction and school reports for those students. As well, the Student Evaluation and Records Branch is addressing methods of appropriately reporting these results and those for the Grade 9 French Language Arts Achievement Test on a provincial level. The preparation of a special report on results for students in French language programs is anticipated in the fall of 1990.

DESCRIPTION OF THE GRADE 6 SCIENCE ACHIEVEMENT TEST

General Description

The time allotted for writing the Grade 6 Science Achievement Test is one hour.

The test consists of 60 multiple-choice questions that are answered on machine-scorable answer sheets.

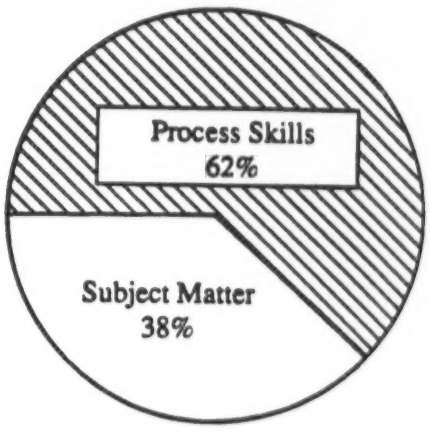
Students must use HB pencils and erasers. Calculators are not required for successful completion of the test.

Content of the Test

The four major components of the Grade 6 Science curriculum and the emphasis that each is to receive according to the *Grade 6 Science Curriculum Specifications (May, 1986)* act as a guideline for the development of the achievement test. These are:

Component	Emphasis
Process Skills	50%
Psychomotor Skills	10%
Attitudes	10%
Subject Matter	30%

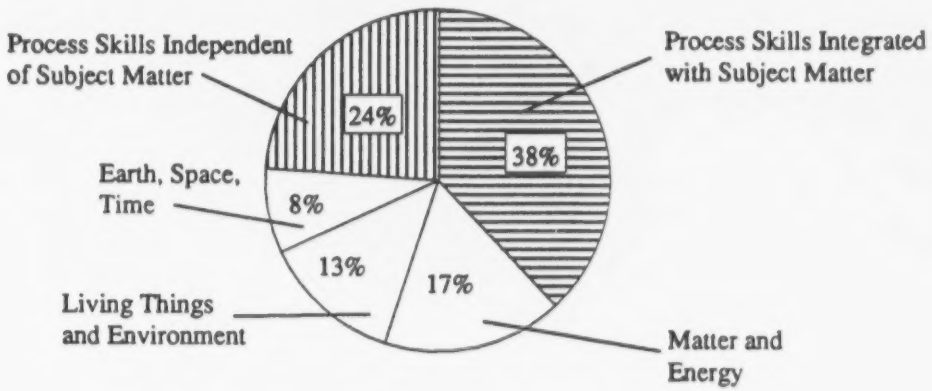
However, the scope of the Grade 6 Science Achievement Test is, of course, limited to those objectives that may be efficiently tested using paper and pencil. While some questions on the test may reflect the psychomotor skills component, basically it is the process skills and subject matter components of the curriculum that are tested. The psychomotor skills and attitudinal components will be reflected in the teacher's evaluation of students. In blueprinting this test, representative proportions of the psychomotor skills and attitudinal emphasis have been combined with the process skills and subject matter emphasis as illustrated in the circle graph below.



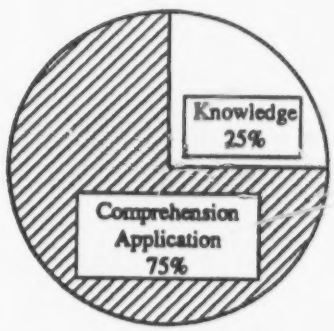
The subject matter component is divided into three subtests to reflect the themes in the Grade 6 Science core. These themes are listed below.

1. Matter and Energy
2. Living Things and Environment
3. Earth, Space and Time

It should be noted that within the process skills component all process skills will be represented, however, emphasis will be placed on inferring, predicting, controlling variables, and interpreting data. The process skills component will consist of questions integrated with the subject matter and questions of process skills independent of subject matter. The emphasis given to each theme and to process skills is shown in the circle graph below.



The test questions represent the cognitive levels of knowledge, comprehension, and application. An explanation of these terms is given in Appendix A. The emphasis given to each cognitive level is shown in the circle graph below.



It is assumed that students are familiar with the terminology used in the curriculum specifications (e.g. inference, variables, hypothesis, closed circuit, changes in composition, etc.).

Blueprint for the Achievement Test

The approximate emphasis by number of questions for each subtest, cognitive level, and component are presented in the table below.

Table 1: Grade 6 Science
Test Blueprint Emphasis by Distribution of Questions

SUBTEST	COMPONENT		TOTAL	COGNITIVE LEVEL[1]		TOTAL
	Process[2] Skills	Subject Matter		Knowledge	Comprehension and Application	
Matter and Energy	11	11	22	6	16	22
Living Things and Environment	9	9	18	4	14	18
Earth, Space, and Time	3	3	6	3	3	6
Process Skills[3]	14	-	14	2	12	14
TOTAL	37	23	60	15	45	60

1 Refer to Appendix A
2 This column indicates the number of test questions in which process skills are integrated with subject matter
3 This column indicates the number of test questions in which process skills are independent of subject matter

Standard Setting

Standard setting is a process whereby teachers are asked to make judgements related to the achievement test to answer the question of whether province-wide performance is satisfactory. For more information on standard setting procedures refer to Appendix B of the Achievement Testing Program, Provincial Report, June 1989 Administration.

Selection of Standard Setters

To qualify for recommendation by a superintendent, a prospective standard setter must have taught Grade 6 science for two or more years, currently be teaching Grade 6 science, and hold a valid permanent Alberta teaching certificate.

Superintendents will be contacted in March 1990 for their recommendations. The Student Evaluation and Records Branch will select approximately 20 teachers from the list of recommended standard setters. Selections will be made to reflect a proportional representation from the various regions of Alberta. Standard setters will be contacted in May.

Sample Questions

Questions that reflect the nature and complexity of the questions that will appear on the achievement test are presented on the following pages.

Teachers are encouraged to familiarize their students with the type of questions and process skills vocabulary that will appear on the achievement test by having their students work through the sample questions. The difficulty level of each question indicates the percentage of students who answered the question correctly in the previous achievement test. For example, a difficulty level of 0.431 indicates that 43.1% of the students answered the question correctly.

Please note that this collection of 13 questions roughly approximates the test emphasis as presented in the blueprint.

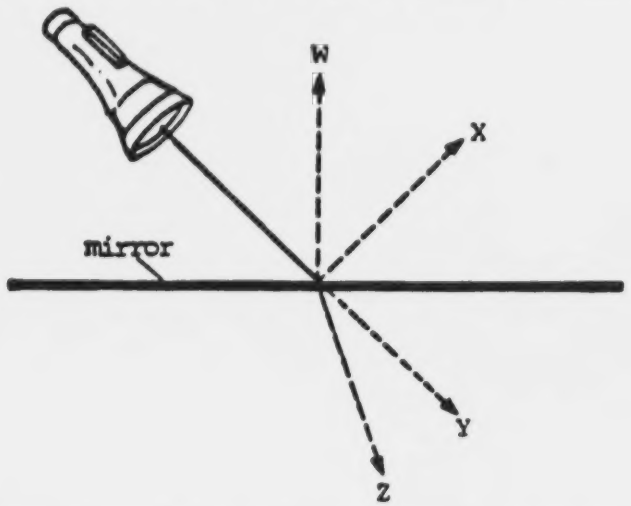
An asterisk denotes the correct answer for each sample question.

Question 1

Concept: Matter and Energy
Subconcept: Light - observe light reflecting off a mirror and infer that light travels in a straight line.
Cognitive Level: Knowledge
Difficulty: 0.748

Use the following information to answer question 1.

In the picture below, a beam of light is shone at a mirror.



1. Which letter shows the path that the light takes?

A. W
*B. X
C. Y
D. Z

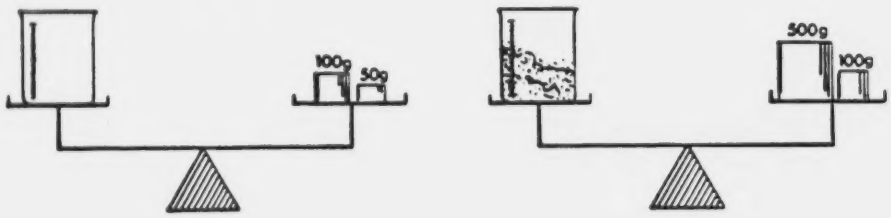
In this question students are required to recall how light is reflected off of a mirror.

Question 2

Concept: Matter and Energy
Process Skill: Measuring - performing necessary mathematical operations when taking measurements
Cognitive Level: Comprehension and Application
Difficulty: 0.427

Use the following information to answer question 2.

John measured the mass of a beaker. He then added some powder to the beaker and measured the mass of the beaker and the powder together.



2. What was the mass of the POWDER?

A. 150 g
*B. 450 g
C. 600 g
D. 750 g

In this question students are required to recall how the mass of the powder could be measured and then apply the correct mathematical operation to calculate the mass of the powder.

Question 3

Concept: Matter and Energy
Process Skill: Communicating - extending sophistication in graphing to include histograms, use of coordinate systems, circle graphs
Cognitive Level: Comprehension and Application
Difficulty: 0.839

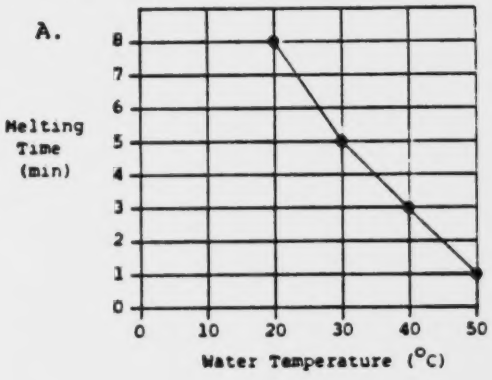
Use the following information to answer question 3.

Suzanne measured how fast ice cubes melted in different temperatures of water. She recorded her observations in the chart.

Water Temperature (°C)	20	30	40	50
Melting Time (min)	8	4	2	1

3. Which graph shows the same information as the chart?

A.



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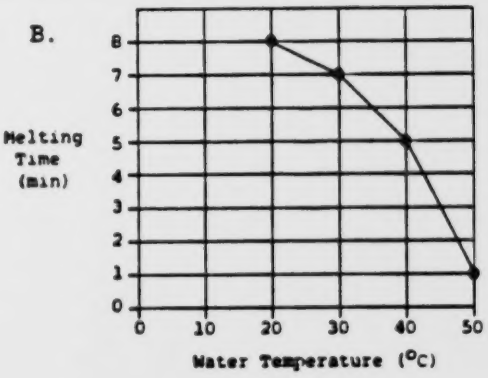
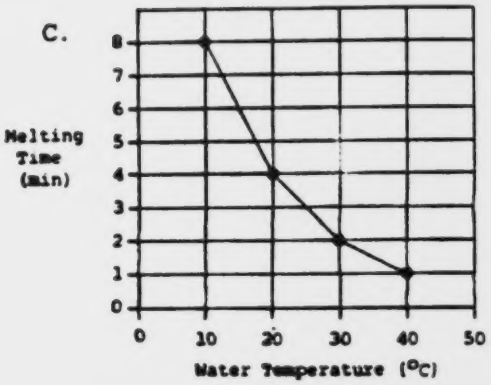
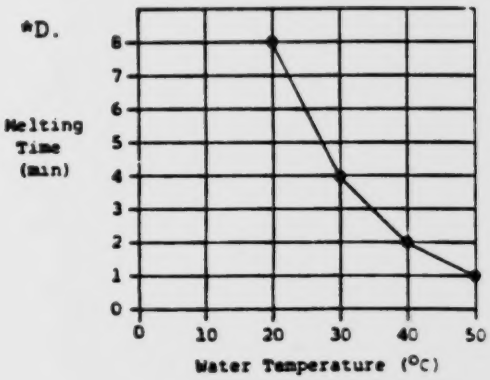


C.



*D.



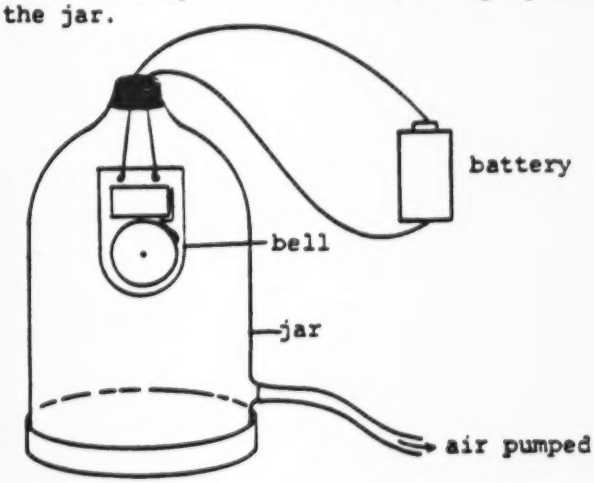
In this question students are required to recognize the correct graphical representation of the data in the table.

Question 4

Concept: Matter and Energy
Subconcept: Sound - observe, describe and demonstrate conditions necessary to produce sound
Cognitive Level: Comprehension and Application
Difficulty: 0.601

Use the following information to answer question 4.

The bell in the diagram can be heard ringing until air is pumped out of the jar.



4. Why can the bell not be heard when the air is removed?

A. The jar stops the sound.
B. Sound gets pumped out of the jar.
*C. Sound needs some material to travel through to reach the ear.
D. The electric circuit works only when there is air in the jar.

In this question students are required to recall the conditions necessary to create sound and apply this knowledge to a new situation.

Question 5

Concept: Living Things and Environment
Subconcept: Environment and Ecosystems - infer interactions and interrelationships to describe a food chain within an environment.
Cognitive Level: Comprehension and Application
Difficulty: 0.558

Use the following information to answer question 5.

Biologists counted the number of birds, rabbits, coyotes and grasshoppers in an area.

Type of Animal	Population
?	4
?	56
?	398
?	2 793

5. Which animal most probably has a population of 4?

A. Bird
B. Rabbit
*C. Coyote
D. Grasshopper

In this question students are required to recall the nature of interactions and interrelationships in a food chain and then infer which group of animals in a particular chain would have the smallest population.

Question 6

Concept: Living Things and Environment
Subconcept: Environment and Ecosystems - classify components of an environment as producer, consumer or decomposer.
Cognitive Level: Knowledge
Difficulty: 0.686

6. Which group contains decomposers only?

A. Bees, molds
B. Coyotes, algae
C. Vultures, weeds
*D. Bacteria, fungi

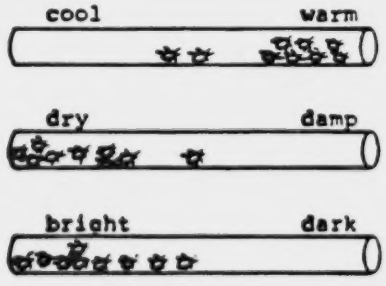
In this question students are required to recall examples of decomposers within an environment.

Question 7

Concept: Living Things and Environment
Subconcept: Environmental Factors - infer the types of natural habitats of organisms on the basis of their response to factors such as temperature, light, and moisture.
Process Skill: Inferring - making as many observations as possible, and choosing only those inferences that account for all observations.
Difficulty: 0.684

Use the following information to answer question 7.

Sally put insects in three tubes to test what kind of environment they prefer. The diagram shows the different environmental factors she tested and where the insects were after a period of time.



7. Which environment would these insects most likely prefer?

A. Marsh
*B. Desert
C. Northern forest
D. Tropical jungle

In this question students are required to infer from the data which environment the insects would most likely prefer.

Question 8

Concept: Living Things and Environment
Subconcept: Adaptations - classify animals as predators or prey on the basis of their special adaptations.
Cognitive Level: Comprehension and Application
Difficulty: 0.495

Use the following information to answer question 8.

The picture shows the skulls of three animals.

1. 2. 3.

8. Which of these skulls would belong to predators?

*A. 1 and 2
B. 1 and 3
C. 2 and 3
D. 1, 2 and 3

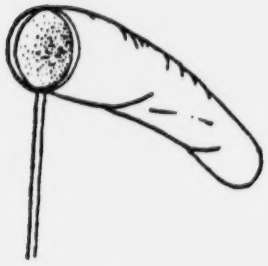
In this question students are required to identify the skulls that belong to the classification of animals known as predators.

Question 9

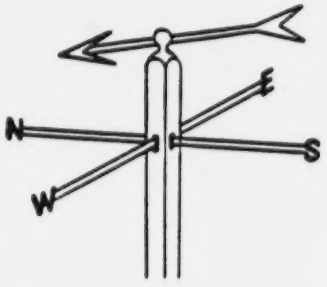
Concept: Earth, Space, and Time
Subconcept: Weather - construct simple weather instruments and use them to measure and record weather factors.
Cognitive Level: Knowledge
Difficulty: 0.618

9. Which instrument is commonly used to measure the speed of wind?

A. Wind sock

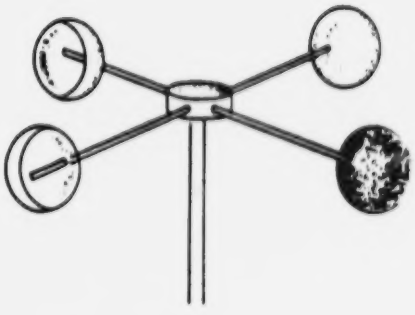


B. Weather vane



C. Weather balloon

*D. Anemometer



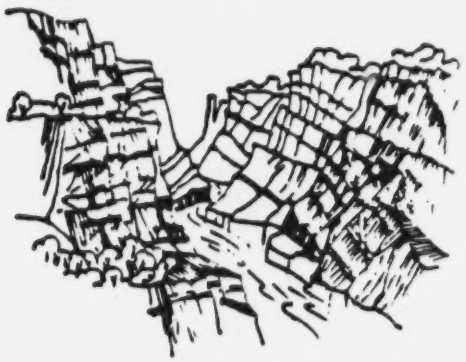
In this question students are required to recall the instrument commonly used to measure the speed of wind.

Question 10

Concept: Earth, Space, and Time
Subconcept: Water and Land - observe changes in the surface of the land caused by wind and running water and infer that these have altered some major land forms over time.
Process Skill: Inferring - applying the inferring process to situations which require direct observations.
Difficulty: 0.708

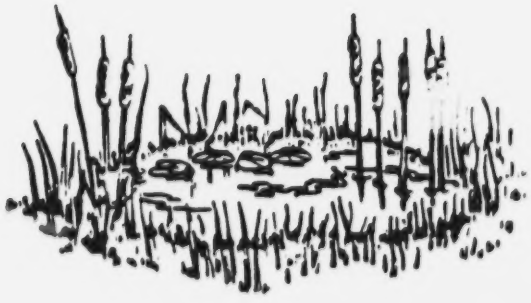
10. In which picture is there evidence that water erosion has occurred over a long period of time?

*A.



B.

C.



D.

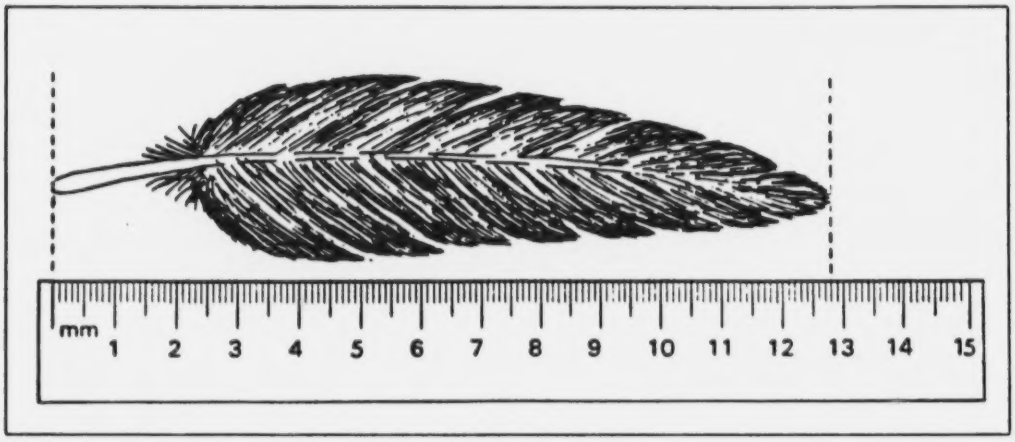
In this question students are required to observe pictures of different lanscapes and infer which one is likely the result of water erosion over a long period of time.

Question 11

Process Skill Independent of Subject Matter: Measuring - using simple instruments for measurement.

Cognitive level: Knowledge
Difficulty: 0.829

Use the following information to answer question 11.



11. The length of the feather is

A. 123 mm
B. 127 mm
*C. 128 mm
D. 129 mm

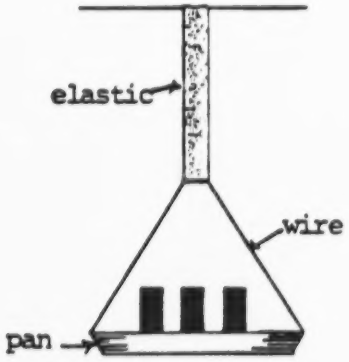
In this question students are required to read the length measurement of the feather indicated on the ruler.

Question 12

Process Skill Independent of Subject Matter: Predicting - making predictions from observing recorded data, e.g. map, graph or model.
Cognitive level: Comprehension and Application
Difficulty: 0.580

Use the following information to answer question 12

This is an elastic scale.



Joshua measured the distance the elastic stretched when different numbers of identical objects were placed in the pan.

Number of Objects	2	4	5	7
Distance elastic streched (cm)	2.0	4.0	5.5	7.9

12. Which is the BEST PREDICTION that can be made from the information in the chart?

*A. Three objects will stretch the elastic 3 cm.
B. Six objects will stretch the elastic 6 cm.
C. Eight objects will stretch the elastic 8 cm.
D. Ten objects will stretch the elastic 10 cm.

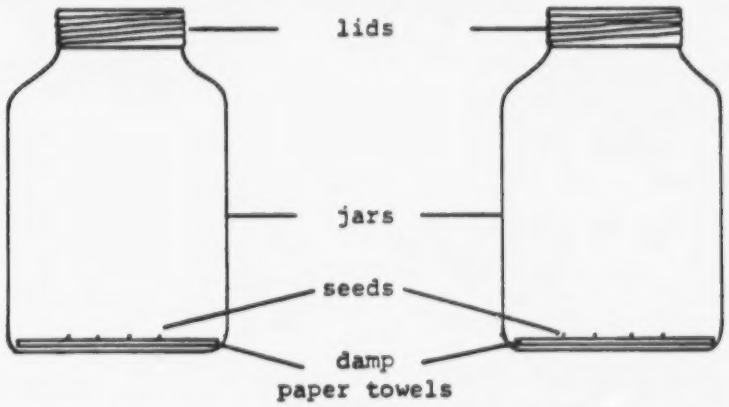
In this question students are required to use the data to select the best prediction.

Question 13

Process Skill Independent of Subject Matter: Controlling Variables - identifying variables that might influence a phenomenon that is being investigated.
Cognitive level: Comprehension and Application
Difficulty: 0.753

Use the following information to answer question 13.

Sue wanted to find out what variables affect the growth of radish seedlings. She set up two identical jars.



Sue placed one jar in a dark refrigerator and one near a sunny window. She measured the length of the seedlings after two weeks.

13. What variables may have caused a difference in growth between the radishes in the two jars?

*A. Light and temperature
B. Moisture and size of jar
C. Moisture and number of seeds
D. Light and length of growing time

In this question students are required to identify the variables that may have caused a difference in growth between the radishes in the two jars.

DRAFT

Purpose of Performance Standards

The Grade 6 performance standards statement is intended to help educators develop a shared, province-wide understanding of acceptable and excellent levels of achievement for Grade 6 Science.

Presented on the following pages are DRAFT statements which describe what is expected of Grade 6 students who are achieving at an acceptable or an excellent level of performance on independent work at the end of the *Grade 6 Science Program*. Once finalized, these statements will represent the standards of performance against which provincial and/or local levels of student achievement will be compared. By comparing actual provincial results to expected provincial performance standards, it can be decided if achievement is in fact "good enough." The standards of performance inherent in these statements are derived from the goals and objectives of Division II Science as presented in the *Program of Studies for Elementary Schools, 1982*.

Through discussions held with educators in developing the achievement tests, the expectation exists that 85 per cent of all students will meet acceptable levels of performance but only 15 per cent will achieve a level of excellence. We are interested in knowing if these standards of performance and the expectations of how many students will meet these levels of performance are appropriate. Your views regarding these expectations would be appreciated and may be forwarded to:

Dennis Belyk
Associate Director
Achievement Testing and Diagnostic Evaluation Programs
Student Evaluation and Records Branch
Alberta Education
Box 43
11160 Jasper Avenue
Edmonton, Alberta
T5K 0L2 FAX: 422-4200

Target Group

The Grade 6 science course is intended for all students enrolled in the regular Grade 6 program. It is expected that these students will have successfully completed science at the Grade 5 level. The standards inherent in the Grade 6 science course, and described below, are for this target group.

Acceptable Level of Performance

Students who have achieved an acceptable level of performance in Grade 6 science have an essentially accurate but often narrow understanding of the conceptual and procedural knowledge that is fundamental to the program. For example, they may know that adding energy to matter may result in changes of shape, size, and state and that these changes are often easily reversed but not understand that changes of composition such as rusting or burning usually involve relatively large amounts of energy and are not easily reversed. Similarly, students may know how to demonstrate the conditions necessary to produce sound but be unsure of the procedures needed to demonstrate how materials vary in their ability to transmit, reflect, or absorb sound.

For their level of performance to be considered acceptable, students must also be able to use their conceptual and procedural knowledge to perform the routine cognitive and psychomotor tasks and procedures that are fundamental to the program. While their skills may be sufficiently well developed to permit them to accomplish what was assigned, their efforts often lack fluidity and may require conscious attention to be successful. For example, such students may be able to construct simple electric circuits very well but because of their narrow range of conceptual and procedural knowledge, be unable (without prompting or assistance) to manipulate components of the system to demonstrate their effect on the circuit. Similarly, in many situations, they experience difficulty transferring their knowledge and skills from the classroom to a real-life situation. For instance, they may be unable to isolate and manipulate the variables that are causing a household lamp to be inoperative.

Students achieving acceptable levels of performance generally exhibit a positive attitude towards the study and processes of science and most have some appreciation of science in their daily lives. They may, however, be somewhat lacking in their ability to use inquiry skills or in their willingness to examine the social implications of science. For example, most students are able to appreciate that electricity has an important technological role in society but may be reluctant or unable to discuss the impact of the burning of fossil fuels on the environment. In addition, students may require encouragement to develop their own abilities to explore and interpret objects and events in their own local environment.

Excellent Level of Performance

Most students who have achieved an excellent level of performance in Grade 6 science have a superior understanding of the essential conceptual and procedural knowledge that is fundamental to the program. For example, many students know that energy exists in different forms and can be classified as renewable or nonrenewable. In addition, they understand that the conservation of energy and the development of alternate sources are essential to our future well being. Similarly, students often know how to design, construct, and control variables (such as light, temperature, and moisture) when determining how organisms respond to changes in their environment.

For their level of performance to be considered excellent, students must be able to use their internalized conceptual and procedural knowledge to accomplish assignments confidently and without hesitation. In addition, students can perform higher cognitive and psychomotor tasks and procedures that are extensions of the program. As a result, these students may not only be able to demonstrate that a beam of light can be reflected or refracted but also be proficient in their ability to predict the possible paths of light under various conditions, demonstrate the effect that lenses, mirrors, and prisms have on light, and infer that white light is a combination of all the colors of the spectrum. Similarly, students often are able to transfer and apply their knowledge and skills from the classroom to a real-life situation. For instance, students can explain how optical instruments, such as eyeglasses and binoculars, are designed and describe the mechanics of their day-to-day operation.

Students achieving an excellent level of performance exhibit an awareness, appreciation, and interest in science as it relates to the environment, themselves, and society. In addition, they have the ability to use inquiry skills and the willingness to examine the social implications of science. In many cases these students are able to express their appreciation that the earth environment changes due to the influence of the physical factors of weather, radiation, and life forms, discuss and infer possible effects of the changes on the environment, and then develop strategies to investigate the potential implications for society (i.e. the deterioration of the ozone layer of the Earth's atmosphere).

APPENDIX A: EXPLANATION OF COGNITIVE LEVELS

1. Knowledge

   Knowledge is defined as those behaviours and test situations that emphasize the remembrance, either by recognition or recall, of ideas, material, or phenomena. This level comprises knowledge of terminology, specific facts (dates, events, persons, etc.), conventions, classifications and categories, and theories and structures.

2. Comprehension and Application

   Application requires that the students apply an appropriate abstraction (theory, principle, idea, and/or method) to a new situation.

   Comprehension refers to responses that demonstrate understanding of the literal message contained in a communication. This means that the student is able to translate, interpret, or extrapolate. Translation refers to the ability to put a communication into another language. Interpretation involves the reordering of ideas (inferences, generalizations, or summaries). Extrapolation is the ability to make estimates or predictions based on an understanding of trends or tendencies.

APPENDIX B:

"Why Do We Have to Give These Tests?"
Achievement Tests and the Whole Language Success Story

Peggy Skett and Ruth Hayden

"Why do we have to give those tests?" is a question echoed in many staff rooms at the beginning of June. Frequently, those who are most forceful in voicing their concerns about Provincial Achievement Tests are those Grade Three teachers who adhered to the whole language philosophy. Comments such as "They don't fit with the way I teach"; "They are a waste of time"; "My kids don't know how to do those tests"; "They only measure product, not process" are commonplace as the testing date approaches. These teachers are not against evaluation per se; rather they are reluctant to accept an evaluation tool which they feel has little validity with respect to their teaching philosophies.

Evaluation is defined as a judgement made about student performance in relation to defined outcomes. It is an umbrella or inclusive term which encompasses other terms like assessment, diagnosis, and interpretation. Evaluation is the process of judging the value of what has been assessed. Assessment occurs in many different ways -- all providing information about what a student has learned. Standardized tests (to which Provincial Achievement Tests belong) are one kind of assessment. Other less formal types are anecdotal records, observational checklists, and accumulated files of student work. As an achievement test for one of four subject areas is given annually to all Grade Three students in the Province, it seems reasonable and fair to examine the justification for concerns such as those noted above.

WHY DO I HAVE TO GIVE STANDARDIZED TESTS?

The purpose of standardized testing is to provide for valid comparisons across groups -- among schools and among school jurisdictions throughout the province. A perfect comparison may not be possible, however, because teachers of young children naturally give prompts to their students as they do the test, in spite of the administration manual directions. Just one little prompt can put one group at an advantage.

Standardized tests are used to provide information about how well student learning outcomes are being achieved. These tests provide one measure of accountability and are a way of reporting what is happening in our schools to the rest of society by informing both the public and ourselves about the strengths and weaknesses of our programs.

HOW VALID IS THE TEST IF MY STUDENTS DON'T NORMALLY EXPERIENCE THIS KIND OF SITUATION?

It is possible that the testing experience might not be valid, especially for Grade 3 children in whole language classrooms. The test itself may not reflect meaningful language experiences through which students are provided a total context for reading and writing. Since testing is not a common experience for such young children, Alberta Education actually states in their Student Achievement Testing Program Bulletin that teachers should prepare their students for the testing situation by explaining the purpose of the test beforehand and giving their students the sample questions contained in the bulletin. Students should have practice with the test format and should not meet it without any preparation. Just as teachers prepare their students for a wide variety of experiences such as street safety at Halloween, turn-taking during group play, or how to borrow books from the library, so too they can assist their students in coping with the requirements needed to do the test in competent ways.

AREN'T STUDENTS THIS AGE TOO YOUNG TO BE TESTED?

For some students in Grade Three -- yes, there are some reasons for which the testing experience is inappropriate, for example, ESL students or others who have particular language deficits. However, Alberta Education makes provisions for those students whom teachers feel the test would be inappropriate and allows them to not write the test, by permission of the district superintendent.

WHO MAKES UP THESE TESTS?

The tests are created by classroom teachers who are considered to be knowledgeable about specific subject content. In the case of preparing Alberta Education achievement testing, teachers, consultants, and Alberta Education personnel are involved. The process of development is quite lengthy. Questions are created according to those curriculum specifications previously set out by Alberta Education. The questions are grouped into tests which are piloted throughout the province. Based upon several piloting efforts, the actual test is composed of those questions which have been revised a number of times. The final draft is examined by an Achievement Test Review Committee which includes representatives from the ATA, Council of Alberta School Superintendents, Alberta post-secondary institutions, and Alberta Education.

Alberta Education gives all teachers in the province a mandate in the form of educational outcomes of what it expects students to learn in school. In other words, teachers are expected to provide their students with those learning opportunities which will allow them to understand the various curricula. The teaching methods and curriculum implementation are not dictated. Only the outcomes of the teaching/learning process are measured.

WHAT IF I HAVEN'T TAUGHT A PARTICULAR SKILL OR UNIT?

If we have followed the program of studies, then this is no problem. Remember, the test questions are aligned with provincial outcomes. By examining the curriculum guides and by planning our teaching to meet the demands of these guides regardless of our education philosophies or methodologies, we can be sure that our students are adequately prepared to understand the content of the tests.

WHY DOES IT TAKE SO MUCH TIME TO GIVE THE TESTS?

The time element is not really a critical factor. For example, a Grade 3 student will spend approximately two hours writing the provincial test. When one considers that the tests are supposed to reflect the curriculum learning in the tested subject for the first three grades, two hours over a three-year period is somewhat minimal.

ARE NOT OTHER EVALUATION METHODS BETTER?

Yes, but for other purposes. In order for Alberta Education to be able to measure student achievement across the province, something standard must be used. Thus, we have the achievement tests.

To argue that informal evaluation is sufficient of itself as the sole measure of the learning that goes on in our classrooms holds no more credibility than the argument that achievement testing is the only true evaluation of our teaching endeavors. There is danger when one form of evaluation is given priority and emphasized as being the one and only method by which we judge.

Both forms of assessment are necessary to provide complete profiles of student learning. One form is not more valuable than the other. On the contrary, informal and formal compliment each other in assessing the breadth and depth of student achievement whether individually or as groups.

WHY DO I HAVE TO GIVE THE TESTS WHEN I CAN'T USE THE RESULTS FOR FINAL REPORT CARDS?

This is valid -- to a point. It is true that results, which are returned to the schools in September, cannot be used for evaluation in June. However, they can be used to determine if there are any gaps or strengths in our program.

Furthermore, the bulletin from Alberta Education actually states that the test results are not to be used to provide information for student placement or promotion. Results are sent to each respective school jurisdiction. A district profile, as well as individual student profiles are sent to the superintendents and principals of schools where students wrote the exams. No individual statements are sent to students. It becomes important then to have other assessment tools in place -- to demonstrate to students and their parents the progress that has been achieved.

I TEACH READING FROM MEANINGFUL WHOLE PASSAGES SO THAT STUDENTS CAN USE ALL THEIR CUEING SYSTEMS. HOW DOES THE TEST PROVIDE FOR THIS?

A test format may isolate specific skills in order to measure them. Alberta Education test developers are presently attempting to meet this concern by providing meaningful passages which are complete within the test -- for example, poems or short stories.

CONCLUSION

There may always be tension about evaluation tools just as there are differences of opinion about various philosophies and methods of teaching reading and writing. However, if we believe in our philosophy of providing children with opportunities for meaningful language learning in our classrooms and if we believe that our wholistic approaches to instruction and learning encourage them to be competent users of language, student success on Provincial Achievement tests will highlight the worth of our programs.

If on the other hand, our results from the achievement tests do not reach acceptable standards, all our other forms of assessment will be called into question, making educational policy makers suspicious of our philosophies and the wholistic approaches we currently are using in our classrooms. By understanding why achievement tests are mandated, how they are developed, and what they involve, we may be, like our students, better prepared to test the metal of our beliefs and ensure continued success with these exciting language learnings in our classroom.

Peggy Skett teaches at Bisset School.
Ruth Hayden is an associate professor at the University of Alberta.

Taken from: *Connections*, Summer 1989. International Reading Association.

Bulletin du Programme de tests de rendement

Sciences 6e Année

Année scolaire 1989-90

Priorité aux élèves!

Student Evaluation and Records

Alberta EDUCATION

Septembre 1989

Ce bulletin contient les renseignements généraux sur le programme des tests de rendement (Student Achievement Testing Program) pour 1990 et des renseignements propres au test de rendement de Sciences 6^{e} année.

On peut se procurer des exemplaires supplémentaires de ce bulletin en téléphonant à Alberta Education au 427-2948.

DIFFUSION: les directeur généraux des écoles • les directeurs d'école et les enseignants • Alberta Teachers' Association • Alberta School Trustees' Association • les hauts fonctionnaires du ministère de l'Éducation • le public, sur demande

Septembre 1989

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BUT DU PRÉSENT BULLETIN

Le test de rendement de Sciences de 6^{e} année sera écrit le 12 juin 1990. Ce bulletin fournit des renseignements généraux sur le Programme de tests de rendement de même que des renseignements précis sur le plan, la composition et la notation du test de rendement de Sciences de 6^{e} année.

Les *Grade 9 Sciences Curriculum Specifications (May 1987)* exposent le contenu et les objectifs spécifiques pour les 4^{e}, 5^{e} et 6^{e} années. Ces spécifications servent de guide pour préparer les questions de test.

Il conviendra que les élèves aient accès aux renseignements que donne ce bulletin, particulièrement aux questions types.

Questions ou commentaires sur le présent bulletin sont à adresser à:

Dennis Belyk
Associate Director
Achievement Tests and Diagnostic Evaluation Programs
Student Evaluation and Records Branch
Alberta Education
Devonian Building, West Tower
11160 Jasper Avenue
Edmonton, Alberta T5K 0L2
Téléphone: 427-2948

ou au bureau régional d'Alberta Education le plus proche:

Grande Prairie Regional Office
5th Floor, Nordic Court
10014 - 99 Street
Grande Prairie, Alberta T8V 3N4
Téléphone: 538-5130

Edmonton Regional Office
8th Floor, Harley Court
10045 - 111 Street
Edmonton, Alberta T5K 1K4
Téléphone: 427-2952

Calgary Regional Office
12th Floor, Rocky Mountain Plaza
615 Macleod Trail SE
Calgary, Alberta T2G 4T8
Téléphone: 297-6353

Red Deer Regional Office
3rd Floor West, Provincial Building
4920 - 51 Street
Red Deer, Alberta T4N 6K8
Téléphone: 340-5262

Lethbridge Regional Office
200 - 5th Avenue South
Lethbridge, Alberta T1J 4V7
Téléphone: 382-5243

RENSEIGNEMENTS GÉNÉRAUX

But du programme de tests de rendement

Le programme des tests de rendement fournit à Alberta Education, aux juridictions scolaires et au public des renseignements, ayant de l'importance au niveau provincial et local, sur les connaissances, la compréhension et les compétences des élèves quant aux objectifs du programme. Ce programme ne vise pas à fournir des renseignements à utiliser pour la détermination du niveau des élèves ou leur avancement.

Ces tests sont donnés sur un cycle de quatre ans dans quatre sujets: langues, études sociales, mathématiques et sciences, et à trois niveaux: 3e, 6e et 9e années.

Nature du programme de tests de rendement

Les tests de rendement sont particuliers au programme d'études prescrit par le ministre de l'Éducation. Les spécifications du programme pour chaque matière, fournies par le Curriculum Branch et le Language Services Branch d'Alberta Education, identifient les grandes subdivisions du programme, les objectifs d'étude précis de chaque subdivision et l'importance à donner à chacun de ces objectifs. Les questions des tests reflètent ces spécifications. Elles reflètent aussi les normes qui sont implicites dans le programme d'études. Pour plus d'information sur ces normes, prière de se reporter aux pages 21 à 23.

Les enseignants dans les écoles de toute la province jouent un rôle important dans la préparation des questions et l'administration des tests. Lorsque les élèves ont passé le test, leurs réponses sont analysées pour déterminer si chaque question convient pour figurer dans le test. Les questions peuvent subir de nombreuses révisions avant d'apparaître dans un test de rendement.

La version définitive de chaque test est examinée par un comité de révision (Achievement Test Review Committee), qui comprend des représentants de divers groupes (The Alberta Teachers' Association, the Conference of Alberta School Superintendents, Alberta Education) et des établissements d'enseignement postsecondaire de l'Alberta.

Dispenses du programme de tests de rendement en anglais

Tous les élèves auxquels le sujet faisant l'objet du test a été enseigné sont censés participer au programme de tests de rendement. Toute exception devrait être identifiée par le directeur et approuvée par le directeur général des écoles.

Les seuls élèves qui peuvent être dispensés d'y prendre part sont ceux auxquels le test ne s'applique pas. Soit:

1. Les élèves qui sont inscrits dans un programme conçu pour ceux qui ont des besoins spéciaux.
2. Les élèves auxquels la matière faisant l'objet du test a été enseignée dans un autre semestre ou une autre année.

3. Les élèves qui sont inscrits dans un programme d'anglais langue seconde.
4. Les élèves auxquels la matière faisant l'objet du test (mathématiques, sciences ou études sociales) est enseignée dans un langue autre que l'anglais.

Les exemptions pour des raisons autres que celles-ci doivent être approuvées par le directeur de Student Evaluation and Records Branch.

Note: Tous les élèves de 9^{e} année sont tenus de passer le test de rendement d'anglais de 9^{e} année en 1990.

Élèves pour lesquels la langue d'enseignement est le français

Des traductions en français des tests de rendement de mathématiques, sciences et études sociales sont disponibles pour la 6^{e} et la 9^{e} années conformément au calendrier de la page 4. Les juridictions scolaires qui veulent que leurs élèves passent le test de rendement en français doivent le faire savoir à Alberta Education avant le 9 mars 1990.

Administration du programme de tests de rendement

Le programme de tests de rendement est administré conformément à l'*Examination Regulation 531/82* relatif au paragraphe 11(1)(g) de la loi scolaire. Les tests de rendement doivent être administrés aux dates prévues et ne peuvent pas être donnés à une autre date.

Les tests de rendement devraient rester fermés jusqu'au moment de les donner aux élèves. Toute reproduction de tout matériel de test, y compris les livrets de test et les feuilles de réponses, est formellement interdite.

Immédiatement après l'administration des tests de rendement prévus, le directeur doit s'assurer que les livrets de test et les feuilles de réponses soient remis aux bureaux des commissions scolaires. La commission scolaire est responsable de ramasser et de faire parvenir au Student Evaluation and Records Branch tout le matériel de test contenant les réponses des élèves. D'autres détails sur les procédures pour retourner ce matériel au Student Evaluation and Records Branch accompagneront les tests de rendement lorsqu'ils seront remis aux écoles. Pour les écoles privées, les bureaux régionaux d'Alberta Education assument la responsabilité de ramasser et de faire parvenir le matériel de test au Student Evaluation and Records Branch. Tout matériel de test non utilisé peut être conservé par la juridiction scolaire.

Alberta Education supervisera la correction de tous les tests de rendement. La correction des tests de rendement par le personnel de l'école avant de retourner le matériel de test au Student Evaluation and Records Branch est une violation de *Examination Regulations* et contraire au but poursuivi par le programme de tests de rendement.

En 1990, les tests de rendement seront administrés conformément au calendrier suivant:

Mardi 12 juin 1990

Mathematics - Grade 3 (matin)

Sciences* - 6e année (matin)

Language Arts (English) - Grade 9 (matin et après midi)

Jeudi 14 juin 1990

Français - 9e année (matin et après midi)

En 1991, les tests de rendement seront administrés conformément au calendrier suivant:

Mardi 11 juin 1991

Science - Grade 3 (matin)

Mathématiques - 6e année (matin)

Études sociales* - 9e année (matin)

*Pour ceux dont le titre est donné en français, il existe une traduction française. Le test traduit doit être administré en même temps que celui-ci dans sa version anglaise originale.

Diffusion des résultats des tests de rendement

En septembre 1990, sera publié un rapport provincial présentant les résultats globaux pour la province sur les grands aspects du programme d'études. Chaque juridiction recevra aussi un profil du rendement des élèves pour le district parallèlement au rapport provincial, de même que des lignes directrices pour l'interprétation des résultats par juridiction, en fonction des normes provinciales. Alberta Education ne communiquera pas aux élèves leurs résultats individuellement; des profils individuels des élèves seront envoyés aux directeurs généraux.

Les notes de tout élève qui passe un test, bien qu'il en soit exempté, ne figureront pas dans les résultats provinciaux. Des rapports séparés par juridiction et par école seront préparés pour ces élèves.

Les juridictions et les écoles, qui choisissent de faire passer par leurs élèves francophones et/ou d'immersion le test de rendement de Sciences de 6e année dans la traduction française, recevront pour ces élèves les rapports séparés par juridiction et par école. Le Student Evaluation and Records Branch envisage des méthodes pour rendre compte, d'une façon appropriée, de ces résultats et de ceux du test de rendement de Français 9e année au niveau provincial. La préparation d'un rapport spécial sur les résultats des élèves dans les programmes en français est prévue pour l'automne 1990.

DESCRIPTION DU TEST DE RENDEMENT DE SCIENCES 6e ANNÉE

Description générale

Le temps assigné pour le test de rendement de Sciences de 6e année est une heure.

Le test se compose de 60 questions à choix multiples auxquelles les élèves répondent sur des feuilles de réponses qui sont corrigées mécanographiquement.

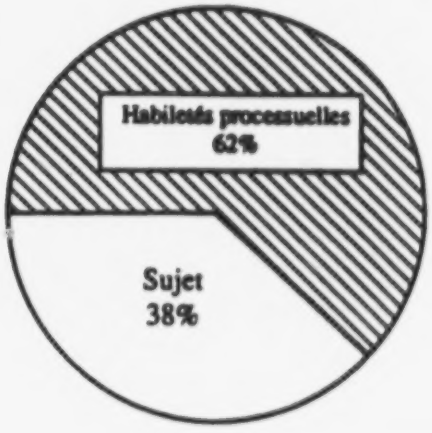
Les élèves doivent apporter des crayons HB et des gommes. Les calculatrices ne sont pas nécessaires pour réussir à terminer le test.

Contenu du test

Les quatre éléments principaux du programme de Sciences de 6e année et le pourcentage accordé à chacun conformément aux *Grade 6 Science Curriculum Specifications (May 1986)* forment la base de ce test de rendement. Ce sont

Éléments	Pourcentage
Habiletés processuelles	50%
Habiletés psychomotrices	10%
Attitudes	10%
Sujet	30%

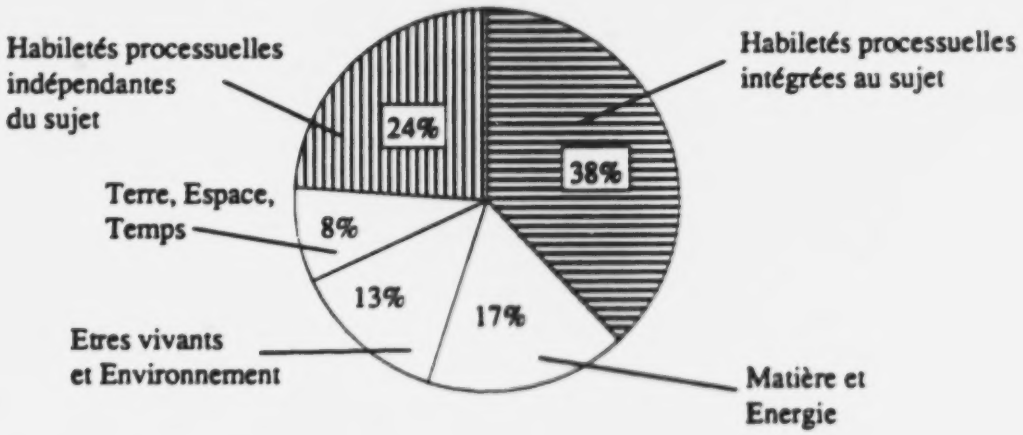
Toutefois, la portée du test de rendement de Sciences de 6e année se limite naturellement aux objectifs qui peuvent être mesurés efficacement en utilisant papier et crayon. Bien que certaines questions du test reflètent l'élément 'habiletés psychomotrices', ce sont essentiellement les éléments du programme 'habiletés processuelles' et 'sujet' qui font l'objet du test. Les éléments 'habiletés psychomotrices' et 'attitudes' seront reflétés dans l'évaluation que l'enseignant fera de ses élèves. Dans le schéma directeur de ce test, les pourcentages représentatifs des 'habiletés psychomotrices' et des 'attitudes' ont été combinés avec les 'habiletés processuelles' et le 'sujet' comme l'indique le cercle ci-dessous.



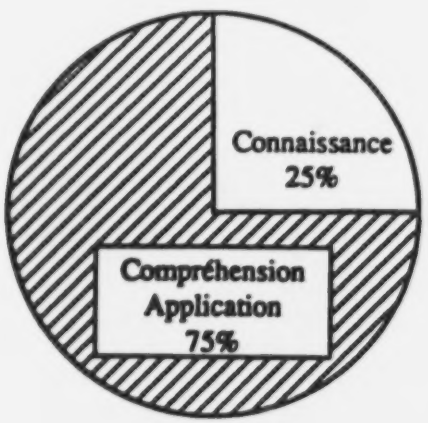
L'élément 'sujet' est divisé en trois subtests pour refléter les thèmes du tronc commun de Sciences de 6e année. Ces thèmes sont donnés ci-après.

1. La matière et l'énergie
2. Les êtres vivants et l'environnement
3. La Terre, l'espace et le temps

Il conviendra de noter que toutes les habiletés processuelles de cet élément seront représentées mais qu'on y mettra toutefois l'accent sur l'inférence, la prédiction, le contrôle des variables et l'interprétation des données. L'élément 'habiletés processuelles' se composera de questions intégrées au sujet et de questions d'habiletés processuelles indépendantes du sujet. Le pourcentage donné à chaque thème et aux habiletés processuelles est indiqué sur le cercle ci-dessous.



Les questions de tests représentent les niveaux cognitifs de connaissance, compréhension et application. Une explication de ces termes est donnée à l'Annexe A. Le pourcentage donné à chaque niveau cognitif est indiqué sur le cercle ci-dessous.



On supposera que les élèves connaissent la terminologie employée dans les spécifications du programme (ex. inférence, variables, hypothèses, circuit fermé, changement de composition, etc.)

Plan d'ensemble du test de rendement

Les pourcentages approximatifs par nombre de questions pour chaque subtest, niveau cognitif et élément sont présentés sur le tableau ci-dessous.

Tableau 1: Sciences 6e année
Pourcentage du plan d'ensemble par répartition de questions

SUBTEST	ÉLÉMENTS		TOTAL	NIVEAU COGNITIF[1]		TOTAL
	Habiletés[2] processuelles	Sujet		Connaissance	Compréhension et Application	
La matière et l'énergie	11	11	22	6	16	22
Les êtres vivants et l'environnement	9	9	18	4	14	18
La Terre, l'espace et le temps	3	3	6	3	3	6
Habiletés processuelles[3]	14	-	14	2	12	14
TOTAL	37	23	60	15	45	60

[1] Se reporter à l'Annexe A

[2] Cette colonne indique le nombre des questions de test dans lesquelles les habiletés processuelles sont intégrées au sujet.

[3] Cette colonne indique le nombre des questions de test dans lesquelles les habiletés processuelles sont indépendantes du sujet.

Établissement de normes

L'établissement de normes est un processus par lequel on demande aux enseignants de porter des jugements relatifs au test de rendement afin de répondre à la question de savoir si les performances au niveau provincial sont satisfaisantes. Pour plus d'information sur les procédures d'établissement des performances, se reporter à l'annexe B du rapport provincial sur le programme de Tests de rendement pour juin 1989.

Sélection d'enseignants pour fixer des normes

Pour pouvoir être recommandé par un directeur général, un enseignant qui veut participer à l'établissement des normes doit avoir enseigné les sciences en 6^{e} année pendant deux ans ou plus, les enseigner actuellement et avoir un certificat d'enseignement de l'Alberta valable. Les directeurs généraux seront contactés en mars 1990 pour faire des recommandations. Student Evaluation and Records Branch retiendra une vingtaine d'enseignants sur la liste des noms recommandés. La sélection se fera pour refléter une représentation proportionnelle des diverses régions de l'Alberta. Les enseignants choisis seront contactés en mai.

Questions types

Les pages suivantes donnent des questions qui reflètent la nature et la complexité des questions qui figureront dans le test de rendement.

On encourage les enseignants à familiariser leurs élèves avec le type de questions et le vocabulaire des habiletés processuelles qui figureront dans le test de rendement en leur faisant faire les questions types. Le niveau de difficulté de chaque question indique le pourcentage d'élèves qui ont bien répondu aux questions dans le test de rendement précédent. Par exemple, un niveau de difficulté de 0,431 indique que 43,1% des élèves ont bien répondu à la question.

Veuillez noter que cet ensemble de 13 questions correspond approximativement au pourcentage du test que donne le schéma.

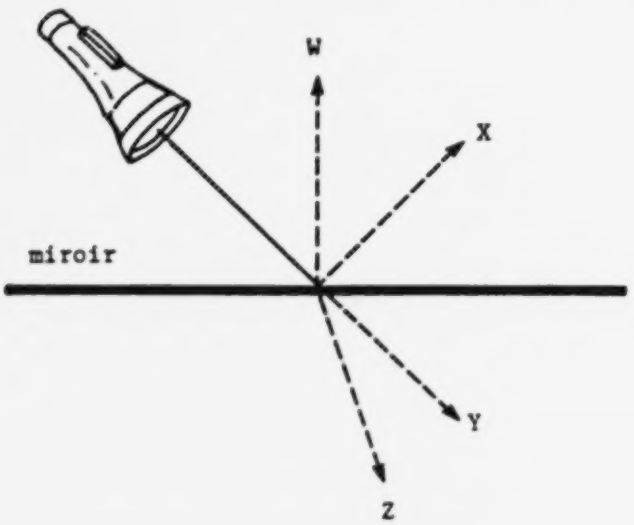
Un astérisque indique la bonne réponse pour chaque question type.

Question 1

Concept: La matière et l'énergie
Subconcept: La lumière - observer la lumière réfléchie par un miroir et en inférer que la lumière se propage en ligne droite.
Niveau cogntif: Connaissance
Difficulté: 0,768

Utilise l'information suivante pour répondre à la question 1.

Sur le dessin ci-dessous, un rayon lumineux est envoyé sur un miroir.



1. Quelle lettre indique le chemin que la lumière suit?

A. W
* B. X
C. Y
D. Z

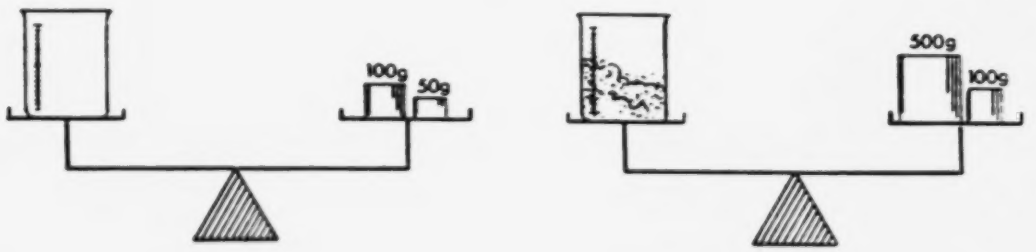
Dans cette question, il est demandé aux élèves de se rappeler comment la lumière est réfléchie par un miroir.

Question 2

Concept: La matière et l'énergie
Habileté processuelle: Mesurer - faire les opérations mathématiques nécessaires quand on prend des mesures
Noveau cognitif: Compréhension et application
Difficulté: 0,427

Utilise l'information suivante pour répondre à la question 2.

Jean a mesuré la masse d'un bécher. Il a ensuite mis de la poudre dans le bécher et mesuré la masse du bécher et de la poudre ensemble.



2. Quelle était la masse de la POUDRE?

A. 150 g
* B. 450 g
C. 600 g
D. 750 g

Dans cette question, il est demandé aux élèves de se rappeler comment mesurer la masse de la poudre et d'appliquer ensuite la bonne opération mathématique pour calculer la masse de la poudre.

Question 3

Concept: La matière et l'énergie
Habileté processuelle: Communiquer - étendre ses savoir-faire en graphique pour inclure des histogrammes, l'emploi de systèmes coordonnés, les graphiques circulaires
Niveau cognitif: Compréhension et application
Difficulté: 0,839

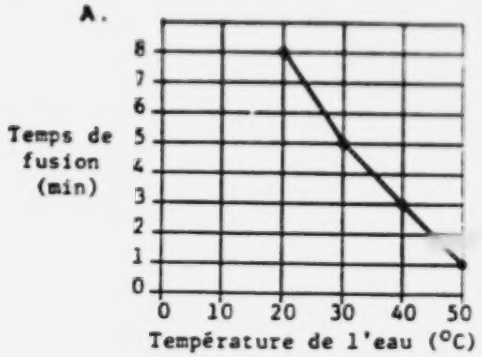
Utilise l'information suivante pour répondre à la question 3.

Suzanne a mesuré à quelle vitesse des cubes de glace fondaient dans de l'eau à différentes températures. Elle a noté ses observations sur le tableau ci-dessous.

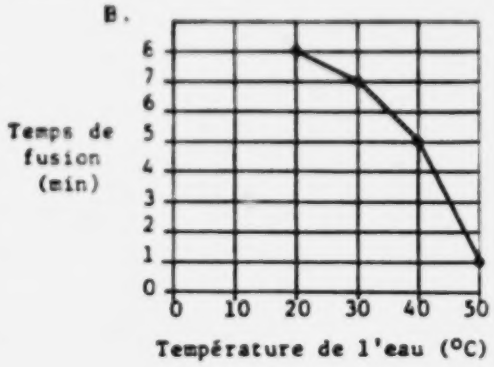
Température de l'eau (°C)	20	30	40	50
Temps de fusion (min)	8	4	2	1

3. Quel graphique donne les mêmes renseignements que le tableau?

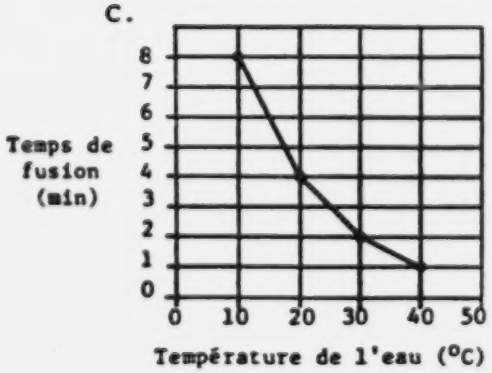
A.



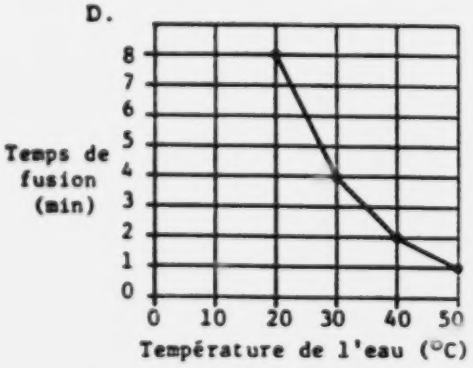
B.



C.



D.



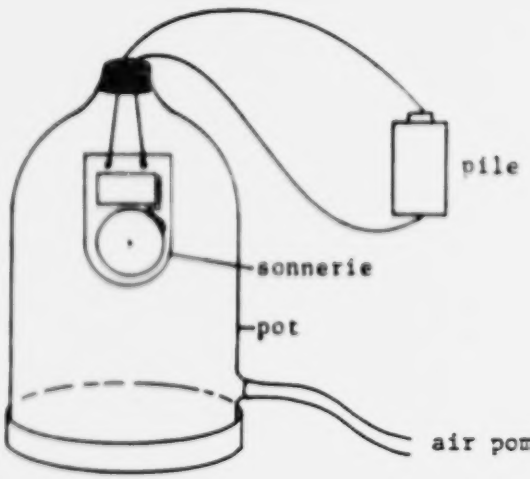
Dans cette question, il est demandé aux élèves de reconnaître la bonne représentation graphique des données du tableau.

Question 4

Concept: La matière et l'énergie
Subconcept: Le son - observer, décrire et démontrer les conditions nécessaires pour produire le son
Niveau cognitif: Compréhension et application
Difficulté: 0,601

Utilise l'information suivante pour répondre à la question 4.

On entendra la sonnerie dans le pot sur le dessin jusqu'à ce que l'air soit pompé et que le pot soit vide.



4. Pourquoi ne peut-on pas entendre la sonnerie quand l'air est enlevé?

A. Le pot arrête le son.
B. Le son est pompé avec l'air.
* C. Le son a besoin d'un matériau pour se déplacer dans l'air et atteindre l'oreille.
D. Le circuit électrique fonctionne seulement quand il y a de l'air dans le pot.

Dans cette question, il est demandé aux élèves de se rappeler les conditions nécessaires pour créer le son et d'appliquer ces connaissance à une situation nouvelle.

Question 5

Concept: Les êtres vivants et l'environnement
Subconcept: L'environnement et les écosystèmes - inférer les interactions et les relations réciproques pour décrire une chaîne alimentaire dans un environnement
Niveau cognitif: Compréhension et application
Difficulté: 0,558

Utilise l'information suivante pour répondre à la question 5.

Les biolgistes ont compté le nombre d'oiseaux, de lapins, de coyotes et de sauterelles dans une région.

Type d'animal	Population
?	4
?	56
?	398
?	2793

5. Quel animal a le plus probablement une population de 47

A. Oiseau
B. Lapin
* C. Coyote
D. Sauterelle

Dans cette question, il est demandé aux élèves de se rappeler la nature des interactions et des relations réciproques dans une chaîne alimentaire et d'en inférer quel groupe d'animaux dans une chaîne particulière aura la plus petite population.

Question 6

Concept: Les êtres vivants et l'environnement
Subconcept: L'environnement et les écosystèmes - classifier les éléments d'un environnement en producteur, consommateur ou décomposeur
Niveau cognitif: Connaissance
Difficulté: 0,086

6. Quel groupe contient seulement des décomposeurs?

A. Abeilles, moisissures
B. Coyotes, algues
C. Vautours, mauvaises herbes
* D. Bactérie, champignons

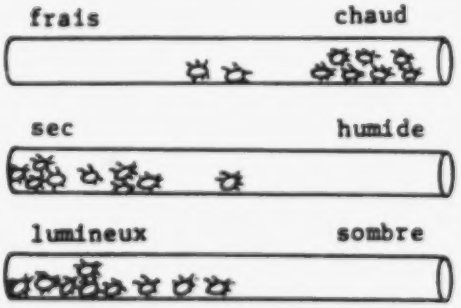
Dans cette question, il est demandé aux élèves de se rappeler des exemples de décomposeurs dans un environnement.

Question 7

Concept: Les êtres vivants et l'environnement
Subconcept: Les facteurs environnementaux - inférer les types d'habitat naturel des organismes en se basant sur leur réponse à des facteurs tels que la température, la lumière et l'humidité
Habileté processuelle: Inférer - faire autant d'observations que possible et choisir seulement les inférences qui expliquent toutes ces observations.
Difficulté: 0,684

Utilise l'information suivante pour répondre à la question 7.

Sally a mis des insectes dans trois tubes pour voir quel genre d'environnement ils préfèrent. Le dessin indique les différents facteurs environnementaux qu'elle a étudiés et où les insectes étaient au bout d'un temps donné.



7. Quel environnement ces insectes préféreraient-ils très probablement?

A. Les marécages
* B. Le désert
C. La forêt nordique
D. La jungle tropicale

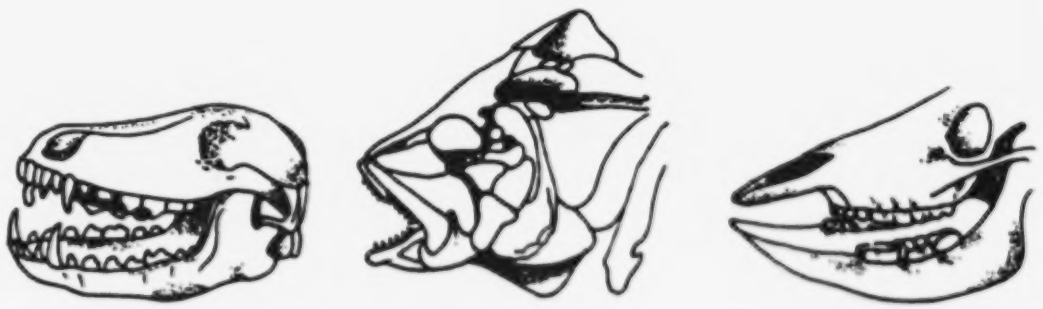
Dans cette question, il est demandé aux élèves d'inférer des données quel environnement les insectes préféreraient très probablement.

Question 8

Concept: Les êtres vivants et l'environnement
Subconcept: Adaptations - classifier les animaux en prédateurs ou en proie en se basant sur leurs adaptations spéciales.
Niveau cognitif: Compréhension et application
Difficulté: 0,495

Utilise l'information suivante pour répondre à la question 8.

L'image montre les crânes de trois animaux.



8. Lesquels de ces crânes appartiendraient à des prédateurs?

* A. 1 et 2
B. 1 et 3
C. 2 et 3
D. 1, 2 et 3

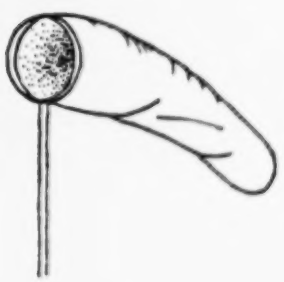
Dans cette question, il est demandé aux élèves d'identifier les crânes qui appartiennent à la classification des animaux connus comme prédateurs.

Question 9

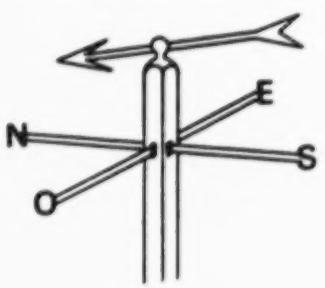
Concept: La Terre, l'espace et le temps
Subconcept: Le temps - construire de simples instruments météorologiques et les utiliser pour mesurer les facteurs atmosphériques
Niveau cognitif: Connaissance
Difficulté: 0,618

9. Quel instrument est communément employé pour mesurer la vitesse du vent?

A. Manche à air

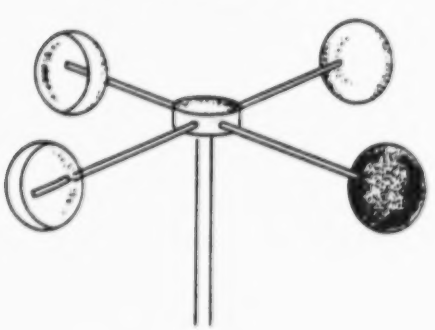


B. Girouette



C. Radiosonde

D. Anémomètre



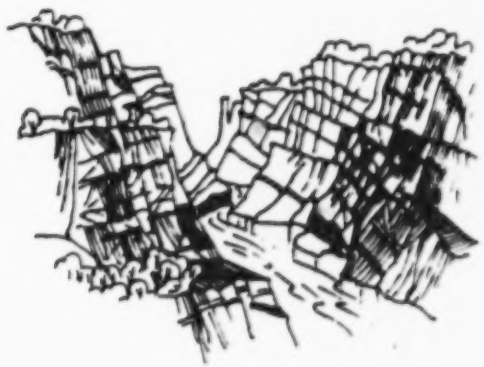
Dans cette question, il est demandé aux élèves de se rappeler l'instrument communément employé pour mesurer la vitesse du vent.

Question 10

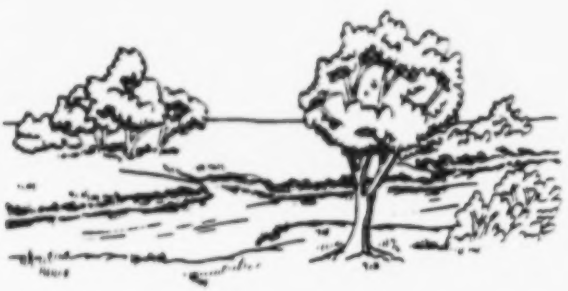
Concept: La Terre, l'espace et le temps
Subconcept: L'eau et la terre - observer des changements à la surface de la terre, qui sont causés par le vent et l'eau courante, et en inférer que des formes terrestres majeures en ont été altérées avec le temps.
Habileté processuelle: Inférer - appliquer le processus d'inférence à des situations qui demandent des observations directes
Difficulté: 0,708

10. Sur quelle image voit-on la preuve que l'érosion de l'eau s'est produite au cours d'une très longue période de temps?

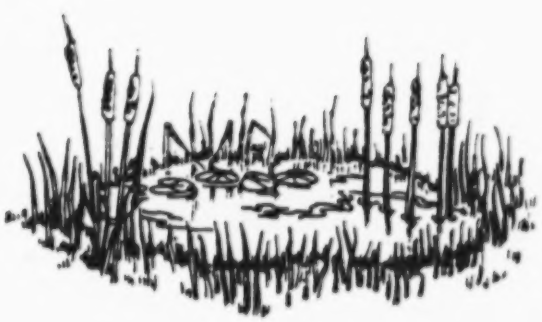
A.



B.



C.



D.

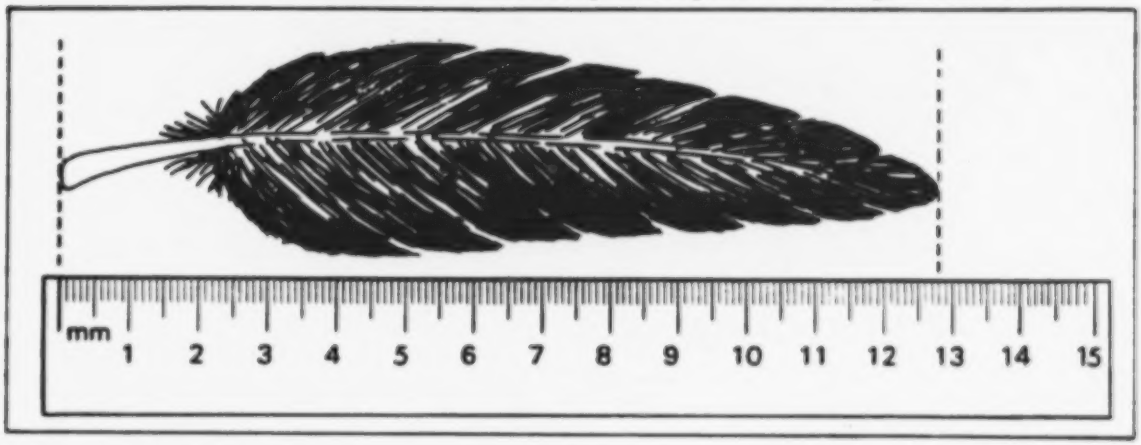
Dans cette question, il est demandé aux élèves d'observer les images de différents paysages et d'en inférer lequel est probablement le résultat de l'érosion de l'eau pendant une très longue période de temps.

Question 11

Habileté processuelle indépendante du sujet: Mesurer - utiliser un instrument de mesure simple pour mesurer

Niveau cognitif: Connaissance
Diffculté: 0,829

Utilise l'information suivante pour répondre à la question 11.



11. La longueur de la plume est

A. 123 mm
B. 127 mm
* C. 128 mm
D. 129 mm

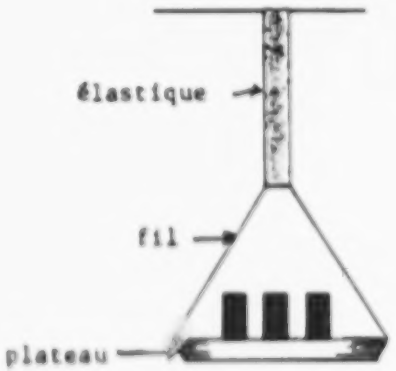
Dans cette question, il est demandé aux élèves de lire la longueur de la plume indiquée sur la règle.

Question 12

Habilité processuelle indépendante du sujet: Prédire - faire des prédictions à partir de l'observation de données enregistrées, ex. carte, graphique ou maquette.
Niveau cognitif: Compréhension et application
Difficulté: 0,580

Utilise l'information suivante pour répondre à la question 12.

Voici un peson.



Jérôme a mesuré la distance dont l'élastique s'est étendu quand des nombres différents d'objets identiques ont été placés sur le plateau.

Nombre d'objets	2	4	5	7
Extension de l'élastique (cm)	2,0	4,0	5,5	7,9

12. Quelle est la MEILLEURE PRÉDICTION qui peut être faite à partir de l'information sur le tableau?

* A. Trois objets étendront l'élastique de 3 cm.
B. Six objets étendront l'élastique de 6 cm.
C. Huit objets étendront l'élastique de 8 cm.
D. Dix objets étendront l'élastique de 10 cm.

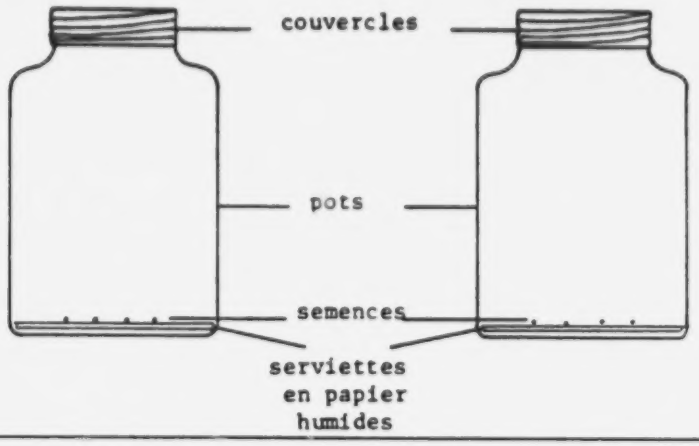
Dans cette question, il est demandé aux élèves d'utiliser les données pour choisir la meilleure prédiction.

Question 13

Habileté processuelle indépendante du subjet: contrôler des variables - identifier des variables qui pourraient influencer un phénomène qui est à l'étude.
Niveau cognitif: Compréhension et application
Difficulté: 0,753

Utilise l'information suivante pour répondre à la question 13.

Sue voulait trouver quelles variables ont un effet sur la croissance de petits plants de radis. Elle a préparé deux pots identiques.



13. Quelles variables ont pu causer une différence de croissance entre les radis des deux pots?

A. Lumière et température
B. Humidité et taille du pot
C. Humidité et nombre de graines
D. Lumière et temps de croissance

Dans cette question, il est demandé aux élèves d'identifier les variables qui ont pu causer une différence de croissance entre les radis des deux pots.

NORMES DE PERFORMANCE

But des normes de performance

Les formulations de normes de performance sont destinées à aider les éducateurs à élaborer une vision commune à toute la province sur les niveaux **acceptable** et **excellent** pour les sciences en 6e année.

Aux pages suivantes sont présentés des projets de formulations qui décrivent ce qu'on attend des élèves de 6e année qui atteignent un niveau de performance **acceptable** ou **excellent** dans un travail indépendant à la fin du programme de sciences en 6e année. Une fois mises au point, ces formulations représenteront les niveaux de performance par rapport auxquels sera jugé le niveau provincial et/ou local des élèves. En comparant les résultats provinciaux avec les normes de performance provinciales attendues, on pourra décider si le niveau est en fait "assez bon". Les normes de performances que l'on trouve dans ces formulations sont tirées des buts et objectifs des sciences de 6e année tels qu'ils sont exposés dans *Program of Studies for Elementary Schools, 1982.*

Au cours de discussions avec les éducateurs lors de la préparation des tests de rendement, il s'est avéré que l'on s'attend à ce que 85% des élèves atteignent un niveau de performance acceptable mais que 15% seulement atteignent un niveau d'excellence. Cela nous intéresse de savoir si ces normes de performance et les attentes quant au nombre d'élèves qui les atteindront sont appropriées. Nous apprécierions de connaître vos points de vue sur ces attentes et vous pouvez les faire parvenir à:

Dennis Belyk
Associate Director
Achievement Testing and Diagnostic Evaluation Programs
Student Evaluation and Records Branch
Alberta Education
Box 43
11160 Jasper Avenue
Edmonton, Alberta
T5K 0L2 Télécopieur: 422-4200

Groupe cible

Le cours de sciences de 6e année est destiné à tous les élèves inscrits dans le programme régulier de 6e année. On s'attend à ce que ces élèves aient terminé avec succès la IIe division des sciences au niveau de la 5e année. Les normes inhérentes au cours de sciences de 6e année et décrites ci-dessous sont pour ce groupe cible.

Niveau de performance acceptable

Les élèves qui ont atteint un niveau de performance acceptable en sciences de 6e année ont une compréhension fondamentalement exacte mais souvent étroite des connaissances conceptuelles et procédurales qui sont essentielles au programme. Par exemple, ils sauront peut-être que le fait d'ajouter l'énergie à la matière peut avoir pour résultat des changements de forme, de taille et d'état et que ces changements sont souvent facilement inversés, sans comprendre que les changements de composition comme la rouille ou la combustion comportent habituellement des quantités d'énergie relativement grandes et ne sont pas facilement inversés. De la même façon, les élèves sauront peut-être démontrer les conditions nécessaires pour produire le son mais ne seront pas certains des procédures requises pour démontrer comment les matières varient dans leur capacité de transmettre, réfléchir ou absorber le son.

Pour que le niveau de performance des élèves soit considéré acceptable, il faut que les élèves soient capables d'utiliser leurs connaissances conceptuelles et procédurales pour exécuter les tâches et procédures cognitives et psychomotrices courantes qui sont essentielles au programme. Bien que leurs savoir-faire soient peut-être assez développés pour leur permettre de faire ce qui leur a été demandé, leurs efforts manqueront souvent d'aisance et pourront nécessiter de l'attention pour réussir. Par exemple, ces élèves seront peut-être capables de très bien construire des circuits électriques simples, mais, à cause de leur faible registre de connaissances conceptuelles et procédurales, ils ne pourront pas (sans incitation ou aide) manipuler les éléments du système pour en démontrer l'effet sur le circuit. De la même façon, dans de nombreuses situations, ils éprouveront de la difficulté à transposer leurs connaissances théoriques et pratiques de la classe à une situation réelle. Par exemple, ils seront peut-être incapables d'isoler et de manipuler les variables qui sont la cause du mauvais fonctionnement d'une lampe à la maison.

Les élèves qui atteignent des niveaux de performance acceptables auront généralement une attitude positive face à l'étude et aux processus des sciences et la plupart apprécieront le rôle des sciences dans leur vie quotidienne. Cependant, ils manqueront peut-être d'aptitude pour utiliser les savoir-faire d'enquête, ou d'inclination pour examiner les implications sociales des sciences. Par exemple, la plupart des élèves sont capables de se rendre compte que l'électricité joue un rôle technologique important dans la société mais ils seront peut-être hésitants ou incapables de discuter l'impact sur l'environnement de la combustion des combustibles fossiles. De plus, les élèves auront peut-être besoin d'être encouragés pour développer leurs propres aptitudes à explorer et interpréter les objets et les événements dans leur propre environnement local.

Niveau de performance excellent

La plupart des élèves qui ont atteint un niveau de performance excellent en sciences de 6e année ont une compréhension supérieure des connaissances conceptuelles et procédurales fondamentales qui sont essentielles au programme. Par exemple, beaucoup d'élèves savent que l'énergie existe sous différentes formes et peut être classifiée comme renouvelable ou non-renouvelable. En outre, ils comprennent que la conservation de l'énergie et l'exploitation des sources de substitution sont essentielles à notre bien-être futur. De la même façon, les élèves savent souvent concevoir, construire et contrôler des variables (telles que la lumière, la température et l'humidité) lorsqu'ils déterminent comment les organismes répondent aux changements survenant dans leur environnement.

Pour que leur niveau de performance soit considéré excellent, il faut que les élèves soient capables d'utiliser les connaissances conceptuelles et procédurales qu'ils ont intériorisées pour exécuter des tâches avec confiance et sans hésitation. De plus, les élèves peuvent exécuter des tâches et des procédures cognitives et psychomotrices plus élevées qui sont des prolongements du programme. En conséquence, ces élèves peuvent non seulement être capables de démontrer qu'un faisceau lumineux peut se réfléchir et se réfracter mais aussi avoir la compétence pour prédire les trajectoires possibles de la lumière dans diverses conditions, pour démontrer l'effet que les lentilles, les miroirs et les prismes ont sur la lumière, et pour en inférer que la lumière blanche est une combinaison de toutes les couleurs du spectre. De la même façon, les élèves sont souvent capables de transposer et d'appliquer leurs connaissances théoriques et pratiques de la classe à une situation réelle. Par exemple, les élèves peuvent expliquer comment des instruments optiques, comme les lunettes et les jumelles, sont conçus et décrire le mécanisme de leur fonctonnement normal.

Les élèves atteignant un niveau de performance excellent font preuve d'intérêt pour les sciences et montrent qu'ils sont conscients du rôle de celles-ci dans l'environnement, la société et leur vie, et l'apprécient. De plus, ils sont capables d'utiliser les savoir-faire d'enquête et sont prêts à examiner les implications sociales des sciences. Dans beaucoup de cas, ces élèves sont capables d'exprimer qu'ils se rendent compte que l'environnement terrestre change sous l'influence des facteurs physiques du temps, des radiations et des formes de vie, et de discuter et d'inférer les effets possibles de ces changements sur l'environnement, et ensuite d'élaborer des stratégies pour en examiner les implications éventuelles pour la société (soit la détérioration de la couche d'ozone de l'atmosphère terrestre).

ANNEX A: EXPLICATION DES NIVEAUX COGNITIFS

1. Connaissance

La connaissance se définit comme les comportements et les situations d'examen qui mettent l'accent sur le souvenir, soit par reconnaissance soit par rappel d'idées, de matériaux ou de phénomènes. Ce niveau comprend la connaissance de la terminologie, de faits spécifiques (dates, événements, personnes, etc.), de conventions, de classifications et de catégories, ainsi que de théories et de structures.

2. Compréhension et application

L'application exige que l'élève applique une donnée abstraite appropriée (théorie, principe, idée et/ou méthode) à une situation nouvelle.

La compréhension s'applique aux réponses qui indiquent que l'élève a saisi le message littéral contenu dans une communication. Cela veut dire que l'élève est capable de traduire, interpréter ou extrapoler. La traduction s'applique à l'aptitude à transposer une communication dans une autre langue. L'interprétation implique la réorganisation des idées (inférences, généralisations ou résumés). L'extrapolation est l'aptitude à faire des estimations ou des prédictions basées sur la compréhension des tendances ou des orientations.

ANNEXE B

"Why Do We Have to Give These Tests?"
Achievement Tests and the Whole Language Success Story

Peggy Skett and Ruth Hayden

"Why do we have to give those tests?" is a question echoed in many staff rooms at the beginning of June. Frequently, those who are most forceful in voicing their concerns about Provincial Achievement Tests are those Grade Three teachers who adhered to the whole language philosophy. Comments such as "They don't fit with the way I teach"; "They are a waste of time"; "My kids don't know how to do those tests"; "They only measure product, not process" are commonplace as the testing date approaches. These teachers are not against evaluation per se; rather they are reluctant to accept an evaluation tool which they feel has little validity with respect to their teaching philosophies.

Evaluation is defined as a judgement made about student performance in relation to defined outcomes. It is an umbrella or inclusive term which encompasses other terms like assessment, diagnosis, and interpretation. Evaluation is the process of judging the value of what has been assessed. Assessment occurs in many different ways -- all providing information about what a student has learned. Standardized tests (to which Provincial Achievement Tests belong) are one kind of assessment. Other less formal types are anecdotal records, observational checklists, and accumulated files of student work. As an achievement test for one of four subject areas is given annually to all Grade Three students in the Province, it seems reasonable and fair to examine the justification for concerns such as those noted above.

WHY DO I HAVE TO GIVE STANDARDIZED TESTS?

The purpose of standardized testing is to provide for valid comparisons across groups -- among schools and among school jurisdictions throughout the province. A perfect comparison may not be possible, however, because teachers of young children naturally give prompts to their students as they do the test, in spite of the administration manual directions. Just one little prompt can put one group at an advantage.

Standardized tests are used to provide information about how well student learning outcomes are being achieved. These tests provide one measure of accountability and are a way of reporting what is happening in our schools to the rest of society by informing both the public and ourselves about the strengths and weaknesses of our programs.

HOW VALID IS THE TEST IF MY STUDENTS DON'T NORMALLY EXPERIENCE THIS KIND OF SITUATION?

It is possible that the testing experience might not be valid, especially for Grade 3 children in whole language classrooms. The test itself may not reflect meaningful language experiences through which students are provided a total context for reading and writing. Since testing is not a common experience for such young children, Alberta Education actually states in their Student Achievement Testing Program Bulletin that teachers should prepare their students for the testing situation by explaining the purpose of the test beforehand and giving their students the sample questions contained in the bulletin. Students should have practice with the test format and should not meet it without any preparation. Just as teachers prepare their students for a wide variety of experiences such as street safety at Halloween, turn-taking during group play, or how to borrow books from the library, so too they can assist their students in coping with the requirements needed to do the test in competent ways.

AREN'T STUDENTS THIS AGE TOO YOUNG TO BE TESTED?

For some students in Grade Three -- yes, there are some reasons for which the testing experience is inappropriate, for example, ESL students or others who have particular language deficits. However, Alberta Education makes provisions for those students whom teachers feel the test would be inappropriate and allows them to not write the test, by permission of the district superintendent.

WHO MAKES UP THESE TESTS?

The tests are created by classroom teachers who are considered to be knowledgeable about specific subject content. In the case of preparing Alberta Education achievement testing, teachers, consultants, and Alberta Education personnel are involved. The process of development is quite lengthy. Questions are created according to those curriculum specifications previously set out by Alberta Education. The questions are grouped into tests which are piloted throughout the province. Based upon several piloting efforts, the actual test is composed of those questions which have been revised a number of times. The final draft is examined by an Achievement Test Review Committee which includes representatives from the ATA, Council of Alberta School Superintendents, Alberta post-secondary institutions, and Alberta Education.

Alberta Education gives all teachers in the province a mandate in the form of educational outcomes of what it expects students to learn in school. In other words, teachers are expected to provide their students with those learning opportunities which will allow them to understand the various curricula. The teaching methods and curriculum implementation are not dictated. Only the outcomes of the teaching/learning process are measured.

WHAT IF I HAVEN'T TAUGHT A PARTICULAR SKILL OR UNIT?

If we have followed the program of studies, then this is no problem. Remember, the test questions are aligned with provincial outcomes. By examining the curriculum guides and by planning our teaching to meet the demands of these guides regardless of our education philosophies or methodologies, we can be sure that our students are adequately prepared to understand the content of the tests.

WHY DOES IT TAKE SO MUCH TIME TO GIVE THE TESTS?

The time element is not really a critical factor. For example, a Grade 3 student will spend approximately two hours writing the provincial test. When one considers that the tests are supposed to reflect the curriculum learning in the tested subject for the first three grades, two hours over a three-year period is somewhat minimal.

ARE NOT OTHER EVALUATION METHODS BETTER?

Yes, but for other purposes. In order for Alberta Education to be able to measure student achievement across the province, something standard must be used. Thus, we have the achievement tests.

To argue that informal evaluation is sufficient of itself as the sole measure of the learning that goes on in our classrooms holds no more credibility than the argument that achievement testing is the only true evaluation of our teaching endeavors. There is danger when one form of evaluation is given priority and emphasized as being the one and only method by which we judge.

Both forms of assessment are necessary to provide complete profiles of student learning. One form is not more valuable than the other. On the contrary, informal and formal compliment each other in assessing the breadth and depth of student achievement whether individually or as groups.

WHY DO I HAVE TO GIVE THE TESTS WHEN I CAN'T USE THE RESULTS FOR FINAL REPORT CARDS?

This is valid -- to a point. It is true that results, which are returned to the schools in September, cannot be used for evaluation in June. However, they can be used to determine if there are any gaps or strengths in our program.

Furthermore, the bulletin from Alberta Education actually states that the test results are not to be used to provide information for student placement or promotion. Results are sent to each respective school jurisdiction. A district profile, as well as individual student profiles are sent to the superintendents and principals of schools where students wrote the exams. No individual statements are sent to students. It becomes important then to have other assessment tools in place -- to demonstrate to students and their parents the progress that has been achieved.

I TEACH READING FROM MEANINGFUL WHOLE PASSAGES SO THAT STUDENTS CAN USE ALL THEIR CUEING SYSTEMS. HOW DOES THE TEST PROVIDE FOR THIS?

A test format may isolate specific skills in order to measure them. Alberta Education test developers are presently attempting to meet this concern by providing meaningful passages which are complete within the test -- for example, poems or short stories.

CONCLUSION

There may always be tension about evaluation tools just as there are differences of opinion about various philosophies and methods of teaching reading and writing. However, if we believe in our philosophy of providing children with opportunities for meaningful language learning in our classrooms and if we believe that our wholistic approaches to instruction and learning encourage them to be competent users of language, student success on Provincial Achievement tests will highlight the worth of our programs.

If on the other hand, our results from the achievement tests do not reach acceptable standards, all our other forms of assessment will be called into question, making educational policy makers suspicious of our philosophies and the wholistic approaches we currently are using in our classrooms. By understanding <u>why</u> achievement tests are mandated, <u>how</u> they are developed, and <u>what</u> they involve, we may be, like our students, better prepared to test the metal of our beliefs and ensure continued success with these exciting language learnings in our classroom.

Peggy Skett teaches at Bisset School.
Ruth Hayden is an associate professor at the University of Alberta.

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